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(54) Title: EXTENDED RELEASE FORMULATION OF BETA-LACTAM ANTIBIOTICS

(57) **Abstract:** A pharmaceutical composition for controlled drug delivery comprising a  $\beta$ -lactam antibiotic or its pharmaceutically acceptable hydrates, salts or esters, and one or more carboxomers. The above  $\beta$ -lactam antibiotics formulation avoids the limitations of known  $\beta$ -lactam controlled release form which are found to be either complex and/or cost-extensive to obtain requiring multiphase and/or selective coatings or fail to achieve the desired controlled release for once daily dosage form. Importantly, in the  $\beta$ -lactam antibiotic form of the above the rate-controlling polymer wherein the  $C_{max}$  of the formulation is substantially the same as that of a single dose of the immediate release formulation. Also advantageously the formulation achieves a rate controlling polymer wherein the  $T > MIC$  for the formulation is more than 17 hours when the MIC is 0.25 mcg/ml and more than 10 hours when the MIC is 2 mcg/ml. The above  $\beta$ -lactam antibiotic form is thus directed to serve as the much desired simple and cost-effective controlled release form suitable for once daily administration.

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